

REMARKS

Claims 1-3 and 6-11 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over U.S. Patent 6,617,409 to Yukawa et al. in view of U.S. Patent 6,177,196B1 to Brothers et al. Claim 4 has been rejected by the Examiner under 35 USC 103(a) as being unpatentable over the combined teaching of Yukawa '409 and Brothers '196 and further in view of U.S. Patent 6,489,396B2 to Nakamura et al. Also, claims 5 and 9-10 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over Yukawa '409 and Brothers '196 and further in view of U.S. Patent 5,216,081 to Mohri et al. These rejections are respectfully traversed.

The present invention is directed to a flake pigment provided with a coating made of a resin composition containing a copolymer comprising a bond unit from a fluoric polymerizable monomer having alkyl fluoride groups and a bond unit arising from a polymerizable monomer having phosphate groups. The flake pigment is used in paint and a powder paint for providing the paint with high brightness. Thus, the flake pigment of the present invention is useable in a powder paint for supplying a film with excellent metallicity and high brightness and further providing excellent secondary adhesiveness.

As the Examiner will note, in the proposed Amendment submitted to the U. S. P. T. O. on February 7, 2008, both claims 1 and 11 are amended to recite that the copolymer comprising bond unit arising from a fluoric polymerizable monomer having alkyl fluoride groups and a bond unit arising from a polymerizable monomer having phosphate groups is "soluble in a solvent due to its molecular structure and the alkyl fluoride groups and the phosphate groups are present in separate side chains of the copolymer". It is believed that these features alone distinguish the present invention from the prior art relied upon by the Examiner.

Thus, in the flake pigment of the present Application, the copolymer covering the flake particle contains:

1. A bond unit arising from a fluorine polymerizable monomer having alkyl fluoride groups; and
2. A bond unit arising from a polymerizable monomer having phosphate groups.

Since the alkyl fluoride groups and the phosphate groups are contained in different bond units, respectively, they are present in independent respective side chains in the copolymer.

As noted, on page 12 of the present Application, the alkyl fluoride group in the copolymer molecular structure in the present invention plays a role of floating the flake pigment to which the copolymer is adsorbed on the surface of the film through the inferior affinity of the alkyl fluoride group with respect to other surfaces. According to this effect, the flake pigment can be arranged in parallel with the substrate, for attaining excellent metallicity. On the other hand, the phosphate group in the copolymer molecular structure of the present invention plays a role of absorbing this copolymer to the flake particles through excellent adsorbability of the phosphate group. The phosphate group can improve secondary adhesiveness at the same time. The phosphate group exhibiting excellent adsorbability with respect to the flake particles can coat the flake particles with the copolymer through adsorption, and neither long reaction time nor complicated polymerization process may be required as compared with conventional polymeric resin coatings which provides an advantageous process in connection with industrial manufacturing.

The alkyl fluoride group in the copolymer molecular structure exhibits inferior affinity with respect to other substances and the phosphate group in the copolymer molecular structure exhibits excellent adsorbability of the phosphate group because the respective groups are present in independent side chains. In other words, such independent roles are never fulfilled if these groups are present in an identical side chain, because, in the copolymer, the side chain having the phosphate groups is selectively adsorbed to the flake particles and the side chain having the alkyl fluoride groups is provided away from the phosphate groups, and consequently, the side chain is likely to form the outermost surface of the flake particle. Accordingly, the effect originating

from the fluoric polymerizable monomer and the effect originating from the polymerizable monomer having phosphate groups are exhibited without contracting each other.

Furthermore, the copolymer of the present invention is soluble in a solvent when coating the surfaces of the flake particles by adsorption as a finishing agent. Therefore, each of the aforementioned fluoric polymerizable monomer having alkyl fluoride groups and the polymerizable monomer having phosphate groups is preferably a monomer having only one polymerization activating site in one molecular, and the obtained polymer is desirably a linear skeleton polymer.

In the Examiner's Office Action dated January 22, 2007, the Examiner recognizes that the Yukawa reference is silent with respect to the copolymer as defined by the present Application. However, the Examiner argues that the copolymer of the present Application can be derived from a combination of the Yukawa and Brothers references. However, the monomer described in the Brothers reference is a fluromonomer having phosphate groups and alkyl fluoride groups in an identical side chain. Thus, since the fluromonomer of the Brothers reference already has phosphate groups in its molecule, one skilled in the art would not copolymerize such a fluoromonomer having phosphate groups with another monomer or a polymer having phosphate groups as described in the Yukawa reference. Thus there would appear to be no logic in combining the teachings of the references as suggested by the Examiner.

Even if, for sake of argument, the fluromonomer of the Brothers reference is copolymerized with a monomer or a polymer having phosphate groups as defined in the Yukawa reference, the copolymer thus obtained is different in structure from the copolymer of the present invention because the alkyl fluoride groups and the phosphate groups are, without exception, present in the identical side chain. That is, the alkyl fluoride groups are present, not in the Yukawa reference but only in the Brothers reference and the alkyl fluoride groups in the Brothers reference are, without exception, present in the identical side chain where the phosphate groups are present (please see the chemical formula in claim 1 of the Brothers reference). Accordingly, a copolymer obtained by copolymerizing the fluoromonomer of the Brothers

reference with the monomer or the polymer having phosphate groups as defined in the Yukawa reference cannot exhibit the excellent effects achieved by the copolymer of the present Application.

In the Examiner's Advisory Action, the Examiner states that the Applicants arguments that "the prior art fails to teach loading the pigment on the surface of the film substrate" is not covered in the claims. However, it appears that the Examiner's comments do not relate to the structure of the flake pigment of the present invention but rather to the function and/or effect of the present Application, and as such, would not appear to be relevant to the claims of the present Application.

Accordingly, in view of the amendments made to the claims in the proposed Amendment and further in view of the above remarks, it is now believed the present Application is in condition for Allowance and accordingly reconsideration of the rejections in allowance of all the claims of the present Application are respectfully requested.

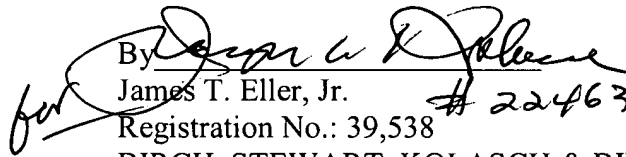
CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Joseph A. Kolasch, Reg. No. 22,463, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

By 
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